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Medical Force Protection: Argentina

Medical Force Protection countermeasures required before, during, and after deployment to Ecuador are as follows:

Major Threats

Diarrheal disease, viral hepatitis A, typhoid and paratyphoid fever, malaria, dengue fever, Venezuelan Equine Encephalitis, leishmaniasis, sexually transmitted diseases, rabies (primarily from stray dogs), heat injury, industrial pollution, and altitude sickness (central region).
Presume local water sources are not safe for drinking.

Requirements before Deployment

1. **Before Deploying report to Medical to:**
   a. Ensure your Immunizations are up to date, specific immunizations needed for area: **Hepatitis A, MMR, Typhoid, Yellow fever, Tetanus (Td), and Influenza.**
   b. If you have not been immunized against Hepatitis A (two dose series over 6 months) get an injection of Immunoglobulin with the initial Hepatitis A dose.
2. **Malaria Chemoprophylaxis**: Risk in rural areas near the Bolivian border (lowlands of Salta and Jujuy Provinces) and along the border with Paraguay (lowlands of Misiones and Corrientes Provinces). Drug resistant strains are present in some locales (chloroquine and possibly Fansidar).

   Recommended regimen: Mefloquine 250mg per week begun 2 weeks prior to entering country and continued weekly until 4 weeks after return from country.

   Personnel in flight status: Doxycycline 100mg per day begun 2 days before entering country. Continue daily while in country and until 28 days after return.

   Terminal prophylaxis (for both chemoprophylaxis regimens)**: Primaquine 15 mg per day** for 14 days starting on day of departure from country of risk. **G6PD status must be determined prior to starting Primaquine.**

3. **Get HIV testing if not done in the past 12 months.**
4. **Complete attached Pre-Deployment Screening form and turn into your Medical Section.**
5. **Make sure you have or are issued from unit supply: DEET, permethrin, bednets/poles, sunscreen and lip balm. Treat utility uniform and bednet with permethrin.**

Requirements during Deployment

1. Consume food, water, and ice only from US-approved sources; **"Boil it, cook it, peel it, or forget it"**.
2. Involve preventive medicine personnel with troop campsite selection.
3. Practice good personal hygiene, hand-washing, and waste disposal.
4. Avoid sexual contact. If sexually active, use condoms.
5. Use DEET and other personal protective measures against insects and other arthropod-borne diseases. Personal protective measures include but are not limited to proper wear of uniform, use of bed nets, and daily "buddy checks" in tick and mite infested areas.
6. Continue malaria chemoprophylaxis.
7. Minimize non-battle injuries by ensuring safety measures are followed. Precautions include hearing and eye protection, enough water consumption, suitable work/rest cycles, and acclimatization to environment and stress management.
8. Eliminate food/waste sources that attract pests in living areas.
9. Avoid contact with animals and hazardous plants.
10. Consider **Acetazolamide (Diamox) 250 mg every 6 – 12 hours** for 1 – 2 days before ascent and continued for 48 hours **if traveling to elevations >2,500 meters** .

Requirements after Deployment

1. Continue malaria chemoprophylaxis.
2. Begin terminal malaria prophylaxis as described above.
3. Receive preventive medicine debriefing after deployment.
4. Seek medical care immediately if ill, especially with fever.
5. Get HIV and PPD testing as required by your medical department or Task Force Surgeon.

ARGENTINA
VECTOR RISK ASSESSMENT PROFILE
(VECTRAP)

Prepared by: **Navy Disease Vector Ecology and Control Center**
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1. GEOGRAPHY: **Area** - 2,771,300 sq. km (1.1 million sq. mi.); about the size of the U.S. east of the Mississippi River. **Cities - *Capital*** - Buenos Aires (metropolitan area pop. 10.5 million) ***Other major cities*** - Cordoba, Rosario, La Plata, Mendoza. **Terrain** - Varied. Climate is varied, predominantly temperate.
Argentina shares land borders with Bolivia, Brazil, Chile, Paraguay and Uruguay. It is bounded by the Atlantic and the Antarctic oceans. Its topography ranges from subtropical lowlands in the north to the towering Andes Mountains in the West and the bleak, windswept Patagonian Steppe and Tierra del Fuego in the South. The climate ranges from hot in the north to cold and rainy in the south. In the heartland are the rich temperate plains known as the pampas.

2. VECTOR-BORNE DISEASES:

a. **Malaria**: is present only in the rural areas of the extreme northwestern corner of the country bordering Bolivia, Province of Salta: Depts. of Santa Victoria, Iruya, Oran; Province of Jujuy: Depts. of San Martin, Ledesma, Santa Barbara, and San Pedro. *Plasmodium vivax* is the major species reported. The risk of acquiring malaria is considered moderate without proper chemoprophylaxis and would result in serious loss of combat effectiveness. Transmission occurs below 1200 meters from DEC - MAY.
Remarks: Focally endemic at low to moderate levels. Officially reported case totals during the late 1980's and early 1990's have varied from about 675 to about 1,670, with *Plasmodium vivax* accounting for nearly all cases. Occasional cases caused by *P. falciparum* (none drug-resistant) or *P. malariae* also occur.

b. ARBOVIRAL FEVERS, **Dengue fever:** Mosquito-vectored (usually Aedes aegypti, a peridomestic container-breeding species with a limited flight range). Endemic status is unclear, but risk may exist in the northeastern lowlands adjacent to Paraguay. (Outbreaks attributed to dengue viral serotype 1 occurred during 1989 in areas of Paraguay bordering Formosa Province of Argentina.) Also, a late 1980's report indicated that 8 percent of sera from inhabitants of Posadas, Misiones Province were antibody positive for a flavivirus--a group that includes dengue fever viruses.

Other Arboviral encephalitides are vectored by several species of mosquitoes. These zoonotic agents usually circulate erratically with only occasional accidental human infections. Sporadic human cases of **St. Louis encephalitis** (SLE) have been reported, and the viral agents for **Western** (WEE) and **Venezuelan** (VEE) **equine encephalitis** have been isolated from mosquitoes. Epizootics of **Eastern equine encephalitis** (EEE) and WEE have occurred and serological evidence of human infection with VEE and EEE has been detected in Corrientes and Chaco Provinces.

Other arboviral fevers: Recent serosurveys in Sante Fe Province found evidence of human infection by several viral agents in the **Bunyamwera** super group, but their relationship to any clinical illness remains uncertain.

c. **Argentine hemorrhagic fever** (AHF): A potentially fatal disease, AHF is caused by inhalation of an aerosolized arenavirus (Junin virus), presumably via dust contaminated with rodent excreta. Transmission may also occur by contact with infective cricetid rodents (primarily *Calomys musculinus*). AHF is focally enzootic in small rodents in the moist Pampas region of east central Argentina (northwest Buenos Aires, southeast Cordoba, southern Sante Fe, and eastern La Pampa Provinces). Highest rodent reservoir populations are associated with weedy borders (e.g., roadsides and fencelines) of cultivated areas of corn and other grains. Most cases occur from April through July.

Hantavirus: In November 1996, Pan American Health Organization, the Regional Office for the Americas and the World Health Organization reported an outbreak of Hantavirus Pulmonary Syndrome in El Bolson, Argentina, a wooded village in the Andes 1,100 miles southwest of Buenos Aires, and in San Carlos de Bariloche, a mountain resort, both in Rio Nergo Province. There are 17 confirmed cases in Rio Negro and nine deaths as of early 1997.
As of April 1999 there were two confirmed deaths due to hantavirus infection.

d. OTHER: **Tick-borne rickettsioses** (reportedly documented from unspecified northeastern areas); **Endemic Typhus (Murine Typhus)** and **Leishmaniasis** are all present at low levels of endemicity in the warmer rural and jungle areas in the North. The risk of acquiring these diseases is considered low. Endemic Typhus and tick-borne rickettsiosis would cause a reduction in combat effectiveness.

e. **Chagas' disease** (American trypanosomiasis) is vectored by triatomid bugs (family: Reduviidae). It may occur from 22 to 45 degrees south latitude and from the Andes east to the coast. It is highly endemic in rural areas, particularly in north central regions, but also is present in Buenos Aires. Risk is highest during late spring -- November and December. Incidence reportedly declined but the endemic area increased during the late 1980's, with an estimated 2.6 million Argentines infected as of late 1990. Some cases may be transfusion acquired.

In 1997 the World Health Organization reported that triatomid house-infestation rates in Argentina had been reduced by 75%.

2. DISEASE VECTOR INFORMATION:

a. Malaria is transmitted by the bite of an infective mosquito (*Anopheles* species). Vector species include *An. pseudopunctipennis* (larval habitats include stream edges and seepage areas, especially those exposed to the sun and containing algae) in northwestern areas, and *An. darlingi* (larval habitats include marshes, lagoons, and ponds) in northeastern areas. Both species will feed on humans indoors.

b. The mosquito *Aedes aegypti* is the only potential vector of Dengue Fever. However, recent introduction of *Ae. albopictus* could provide an alternative vector. *Ae. albopictus* is considered a secondary vector of dengue in Asia. Its habits are similar to *Ae. aegypti* but it tends to prefer used or discarded tires for breeding. *Aedes aegypti* is a peridomestic mosquito that prefers to breed in artific ial containers near human habitations. It is diurnally (i.e., daytime) active and feeds indoors or out, often biting around the neck or ankles. It typically rests indoors after feeding.

c. The reduviid bug *Triatoma infestans* is the only significant vector of Chagas' disease in Argentina. It transmits the disease through its contaminated feces; the bug habitually defecates on the host's skin while feeding. This may lead to inoculation through the bite puncture, abrasions of the skin, or even the mucous membrane of the mouth, either by direct contact or rubbing or scratching. It can be highly domestic, remaining in crevices by day and coming out at night to feed. *Triatoma infestans* may ingest a blood meal in ten to thirty minutes.

d. The flea, *Xenopsylla cheopis*, is the principal vector of Endemic Typhus (Murine Typhus). It will often leave its warm-blooded host to wander into bedding material. Inoculation of murine typhus to man from the rodent reservoir occurs by rubbing flea feces or crushed fle as into the bite puncture site.

e. The sand flies, *Lutzomyia* spp., are the vectors of Leishmaniasis.

3. DISEASE AND VECTOR CONTROL PROGRAMS:

a. Malaria chemoprophylaxis should be mandatory. Consult the Navy Environmental Preventive Medicine Unit #2 in Norfolk, VA (COMM: 757-444-7671; DSN: 564-7671; FAX: 757-444-1191; PLAD: NAVENPVNTMEDU TWO NORFOLK VA) for the current recommendations for chemoprophylaxis.

b. Yellow fever immunizations should be current.

c. The conscientious use of personal protective measures will help to reduce the risk of many vector-borne diseases. The most important personal protection measures include the use of DEET insect repellent on exposed skin, wearing permethrin-treated uniforms, and wearing these uniforms properly. The use of DEET 33% lotion (2 oz. tubes: NSN 6840-01-284-3982) during daylight and evening/night hours is recommended for protection against a variety of arthropods including mosquitoes, sand flies, other biting flies, fleas, ticks and mites. Unifor ms should be treated with 0.5% permethrin aerosol clothing repellent (NSN 6840-01-278-1336), per label instructions. NOTE: This spray is only to be applied to trousers and blouse, <u>not</u> to socks, undergarments or covers. Reducing exposed skin (e.g., rolling shirt sleeves down, buttoning collar of blouse, blousing trousers) will provide fewer opportunities for blood-feeding insects and other arthropods. Additional protection from mosquitoes and other biting flies can be accomplished by the use of screened eating and sleeping quarters, and by limiting the amount of outside activity during the evening/night hours when possible. Bednets (insect bar [netting]: NSN 7210-00-266-9736) may be treated with permethrin for additional protection.

d. The most important element of an *Aedes aegypti* control program is SOURCE REDUCTION. Eliminating or covering all water holding containers in areas close to human habitation will greatly reduce *A. aegypti* populations. Alternatively, containers may be emptied of water at least once a week to interrupt mosquito breeding. Sand or mortar can be used to fill tree holes and rock holes near encampments.

e. Prevention of tick bites includes avoiding tick infested areas when feasible, mandating personal protection measures, clearing campsites of tall grasses and other low vegetation, and spraying area with an appropriate acaricide (always read and follow label instructions). Use the buddy system to search total body area every 3-4 hours for attached ticks. Prompt removal of attached ticks may prevent disease transmission.

f. Because the breeding habitats of most sand fly species are not easily identified, not easily accessible, or unknown, control strategies focus mainly on adult sand flies. Peridomestic sand fly species can be controlled by spraying residual insecticides on buildings (including screening on portals of entry) animal shelters, and other adult resting sites. Area chemical control of sylvan sand fly species is impractical. Personal protective measures will reduce sand fly bites and environmental modification (e.g., clearing forests, eliminating rodent burrows/breeding sites, relocating domestic animals away from human dwellings) has been used to reduce local sand fly populations.

g. Expanded Vector Control Recommendations are available upon request.

4. Important References: Contingency Pest Management Pocket Guide - Fourth Edition. Technical Information Memorandum (TIM) 24. Available from the Defense Pest Management Information Analysis Center (DPMIAC) (DSN: 295-7479 COMM: (301) 295-7479). Best source for information on vector control equipment, supplies, and use in contingency situations.
Control of Communicable Diseases Manual - Sixteenth Edition. 1995. Edited by A. S. Benenson. Available to government agencies through the Government Printing Office. Published by the American Public Health Association. Excellent source of information on communicable diseases.

Medical Environmental Disease Intelligence and Countermeasures - (MEDIC). September 1997. Available on CD-ROM from Armed Forces Medical Intelligence Center, Fort Detrick, Frederick, MD 21702-5004. A comprehensive medical intelligence product that includes portions of the references listed above and a wealth of additional preventive medicine information.

Internet Sites- Additional information regarding the current status of vector-borne diseases in this and other countries may be found by subscribing to various medical information sites on the internet. At the Centers of Disease Control and Prevention home page subscriptions can be made to the Morbidity and Mortality Weekly Report(MMWR)and the Journal of Emerging Infectious Diseases. The address is www.cdc.gov. The World Health Organization Weekly Epidemiology Report (WHO-WER) can be subscribed to at www.who.int/wer. The web site for PROMED is www.promedmail.org:8080/promed/promed.folder.home.
Although PROMED is not peer reviewed, it is timely and contains potentially useful information. The CDC and WHO reports are peer reviewed. Information on venomous arthropods such as scorpions and spiders as well as snakes, fish and other land animals can be found at the International Venom and Toxin Database website at www.uq.edu.au/~ddbfry/. Information on anti-venom sources can also be found at that site. Information on Poisonings, Bites and Envenomization as well as poison control resources can be found at www.invivo.net/bg/poison2.html.